

Online Seminar on Chemotaxis

Date: 17th of April 2023 10:00 – 11:00 in “Central EU” hour
(which is 16:00 – 17:00 in “Beijing” hour and 17:00 – 18:00 in “Seoul–Tokyo” hour)

Speaker: Yoan Tardy (Sorbonne Université)

Title: Collisions of the supercritical Keller-Segel particle system

Abstract:

We study a particle system naturally associated to the 2-dimensional Keller-Segel equation. It consists of N Brownian particles in the plane, interacting through a binary attraction in $\theta/(Nr)$, where r stands for the distance between two particles. When the intensity θ of this attraction is greater than 2, this particle system explodes in finite time. We assume that $N > 3\theta$ and study in details what happens near explosion. There are two slightly different scenarios, depending on the values of N and θ , here is one: at explosion, a cluster consisting of precisely k_0 particles emerges, for some deterministic $k_0 \geq 7$ depending on N and θ . Just before explosion, there are infinitely many $(k_0 - 1)$ -ary collisions. There are also infinitely many $(k_0 - 2)$ -ary collisions before each $(k_0 - 1)$ -ary collision. And there are infinitely many binary collisions before each $(k_0 - 2)$ -ary collision. Finally, collisions of subsets of $3, \dots, k_0 - 3$ particles never occur. The other scenario is similar except that there are no $(k_0 - 2)$ -ary collisions.

Upcoming seminar

Date: 12th of May 2023 10:00 – 11:00 in “Central EU” hour
(which is 16:00 – 17:00 in “Beijing” hour and 17:00 – 18:00 in “Seoul–Tokyo” hour)

Speaker: Christian Stinner (Technische Universität Darmstadt)

Seminar website: <http://www.math.tohoku.ac.jp/~fujie/OSC.html>

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